

**What is claimed is:**

1           1.    A method for forming gate structures with narrow  
2 spacings, comprising the steps of:

3           providing a substrate;

4           successively forming a dielectric layer, a polysilicon  
5           layer, and a capping layer on the substrate;

6           forming a plurality of silicon islands on the capping  
7           layer;

8           oxidizing the silicon islands to form an oxide layer on  
9           the sidewall and the upper surface of each  
10          silicon island;

11          forming a masking layer in each gap between the  
12          oxidized silicon islands;

13          removing the oxide layers to form a narrow opening  
14          between each of the silicon islands and the  
15          masking layers, having a width substantially  
16          equal to the thickness of the removed oxide  
17          layer;

18          successively etching the cap layer and the polysilicon  
19          layer underlying the narrow openings to form the  
20          gate structures with narrow spacings on the  
21          substrate; and

22          removing the silicon islands, the masking layers, and  
23          the capping layer.

1           2.    The method as claimed in claim 1, wherein the  
2 capping layer is a silicon nitride layer.

1           3.    The method as claimed in claim 1, wherein the  
2   masking layer is a photoresist layer.

1           4.    The method as claimed in claim 1, wherein the  
2   masking layer is a silicon layer.

1           5.    A method for forming narrow trench structures,  
2   comprising the steps of:  
3           providing a substrate covered by a layer to be defined;  
4           forming a plurality of oxidable first masking islands  
5                 on the layer to be defined;  
6           oxidizing the first masking islands to form an oxide  
7                 layer on the sidewall and the upper surface of  
8                 each first masking island;  
9           forming a second masking island in each gap between the  
10                 oxidized first masking islands;  
11           removing the oxide layers to form narrow openings  
12                 between the first and second masking islands,  
13                 each one having a width substantially equal to  
14                 the thickness of the removed oxide layer;  
15           etching the layer to be defined underlying the narrow  
16                 openings to form the narrow trench structures on  
17                 the substrate; and  
18           removing the first and second masking islands.

1           6.    The method as claimed in claim 5, further forming  
2   a capping layer on the layer to be defined before forming  
3   the first masking islands.

1           7.    The method as claimed in claim 6, wherein the  
2   capping layer is a silicon nitride layer.

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1           8.    The method as claimed in claim 6, wherein the  
2    layer to be defined is a silicon layer.

1           9.    The method as claimed in claim 6, wherein the  
2    layer to be defined is a metal layer.

1           10.   The method as claimed in claim 5, wherein the  
2    layer to be defined is a dielectric layer.

1           11.   The method as claimed in claim 5, wherein the  
2    first masking island is silicon.

1           12.   The method as claimed in claim 5, wherein the  
2    second masking island is photoresist.

1           13.   The method as claimed in claim 5, wherein the  
2    second masking island is silicon.